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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Lavoie, Jr. et al. Application No.: 10/785,666 Filed: 2/23/2004 Title: POLISHING COMPOSITIONS FOR CONTROLLING METAL INTERCONNECT REMOVAL RATE IN SEMICONDUCTOR WAFERS Attorney Docket No.: 03012US	Art Unit: 3723 Examiner: B. R. Muller

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. § 1.132

That I Terence Michael Thomas declare the following:

1) That I am a current employee of Rohm and Haas Electronic Materials CMP Inc. (fka Rodel, Inc.); and that I have been employed at RHEM CMPT for over seven years in the role of developing polishing formulations and currently have the title of Senior Research Chemist.

2) That my professional qualifications include the following:

Ph.D. Inorganic Chemistry - University of Tennessee, Knoxville, Tennessee
M.S. Physical Chemistry - Colorado State University, Fort Collins, Colorado
B.A. Major: Chemistry Minor: Physics - Benedictine College, Atchison, Kansas

3) That I have published several articles, including the following:

Integrated CMP Barrier Slurry Development to Achieve Adjustable Rate Selectivities, Qianqiu (Christine) Ye, John Quanci, Mathew VanHanehem, Terence Thomas, Conference Proceedings CMP MIC, February 2002.

Cleaning Chemistries for Post CMP Processing for Both Hydrophobic Low Dielectric Constant and TEOS SiO2 Materials, K. H. Block, T. Thomas, J. So and R. Schmidt, Conference Proceedings IITC, June 2002.

CMP Surface Characteristics of Twinned Copper Subgrains, C.Y. Ni, I.W. Hall, T. M. Thomas, J. K. So, J. Quanci, J. Phys. D: Appl. Phys. 37 (2004) 2446.

4) That I have reviewed Kurata et al. US Pat. Pub. No. 2003/0219982 and Tsuchiya et al. US Pat. Pub. No. 2002/0095872 and US Ser. No. 10/785,666.

5) That Table 1 of Kurata et al. suggests that polyvinyl alcohol decreases copper etch rate. Static etch represents a post-polishing issue that can have a detrimental impact upon the semiconductor; and copper static etch is not an absolute predictor of copper polishing rate.

6) That Kurata et al.'s Table 1 discloses a copper removal rate of 80Å/minute without polyvinyl alcohol and a copper polish removal rate of 130 Å /minute with polyvinyl alcohol, a 50 Å /minute increase in copper removal rate during polishing.

7) That it is my opinion that Table 1 of Kurata et al. suggests that polyvinyl alcohol increases copper removal rate and that it does not suggest that polyvinyl alcohol decreases copper removal rate during polishing.

8) That Tsuchiya et al. disclose polyvinyl alcohol as a thickener for increasing the viscosity of a slurry. Furthermore, from my experience, there is typically no expectation for a thickener to have a significant impact upon polishing removal rate. Specifically, changes in a liquid phase's viscosity do not result in foreseeable changes in polish removal rate of a solid phase.

9) In my opinion as scientist skilled in the art of slurry development, there is no motivation in Kurata et al. to combine PVP with the PVA of Tsuchiya et al. to lower copper removal rate.

9) That I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Terence M Thomas

Dr.Terence M. Thomas

April 25, 2006